Web Services with Spring 5

Introduction. Working with Git

About me

Trayan Iliev

– CEO of **IPT – Intellectual Products & Technologies**
http://www.iproduct.org

– Oracle® certified programmer 15+ Y

– end-to-end reactive fullstack apps with Java, ES6+, TypeScript, Angular, React and Vue.js

– 12+ years IT trainer: Spring, Java EE, Node.js, Express, GraphQL, SOA, REST, DDD & Reactive Microservices

– Voxxed Days, jPrime, Java2Days, jProfessionals, BGOUG, BGJUG, DEV.BG speaker

– Organizer RoboLearn hackathons and IoT enthusiast

Key Takeaways:

- Achieve a solid level understanding and practical experience using core Java technologies and APIs – Java IO/NIO/NIO2, generics, functional programming with java - lambdas and Stream API, Multithreading, JDBC;
- Embrace the rich opportunities for rapid web and REST/Web API application development using Spring 5 and Spring Boot modules;
- Solid level understanding and professional use of ORM with Hibernate/JPA;
- Develop, deploy, optimize, secure, and test production grade web applications, services and clients with in Spring Boot, Hibernate, Spring MVC & REST;
- Hands-on experience with Spring Boot, Hibernate, JPA, Spring MVC, Spring Data, Spring Security, Spring Boot tests, Spring MVC Testing framework, JUnit, Mockito.

Course Topics and Homeworks - I

1. Basic Git workflow – 3 h
2. OOP with Java SE – 8h - Homework 1: Algorithmic and data structure problem; Homework 2: OOP programming problem
3. Main Java APIs, Design Patterns – 16 h - Homework 3: Functional programing problem using Stream API; Homework 4: Choosing a REST API course project to implement using DDD and Spring – project specification; Homework 5: Choosing a REST API course project to implement using DDD and Spring – project specification; Homework 6: Extracting JavaDoc comments from project source files
4. Introduction to Spring – 2h - Homework 7: Configure initial version of your course project using Spring Boot

Course Topics and Homeworks - II

5. Spring beans configuration and Dependency Injection (DI) – 6h - Homework 8: Implement model classes, in-memory domain repositories and services for the chosen course project
6. Spring AOP and SpEL basics – 3 h
7. Creating REST controllers – 6h - Homework 9: Implement REST Controllers for the chosen course project
8. Bean Validation API – 1 h
9. Error handling – 2 h - Homework 10: Implement validation and error handling for the chosen course project
10. Spring Boot & Hexagonal Architecture – 1h

Course Topics and Homeworks - III

11. Creating domain services – 3 h - Homework 11: Implement domain services for the chosen course project
12. Creating repositories with Spring Data JPA and Hibernate – 10 h - Homework 12: Implement DAO (persistence) layer for the chosen course project using Spring Data JPA and MySQL
13. Using Data Transfer Objects (DTOs) and model mapping – 3h
14. Testing Spring Boot applications and components with JUnit 5 – 4h
15. Documenting and testing Web APIs using Swagger/OpenAPI
16. Spring Security for the REST API with JWT – 4h - Homework 13: Implement JWT-based security for the chosen course project using Spring Security
17. Recap and final projects discussion – 2h

Course Dates:

- 12, 14, 26, 28, юли;
- 1, 3, 5, 8, 10, 12, 15, 17, 19, 22, 24, 26, 29, 31 август
- 2, 5, 7, 9, 12, 14, 16, 19, 21, 23, 26, 28 септември

Time Schedule

- 18:30 – 19:45 – Block 1
- 19:45 – 20:00 – Break
- 20.00 – 21.15 – Block 2

Software to Install

- IntelliJ IDEA - https://www.jetbrains.com/idea/download/#section=windows
- MySQL Community Server + MySQL Workbench - https://dev.mysql.com/downloads/mysql/
- Chrome Web Browser

Where to Find The Code and Materials?

Java Academy projects and examples are available @GitHub:

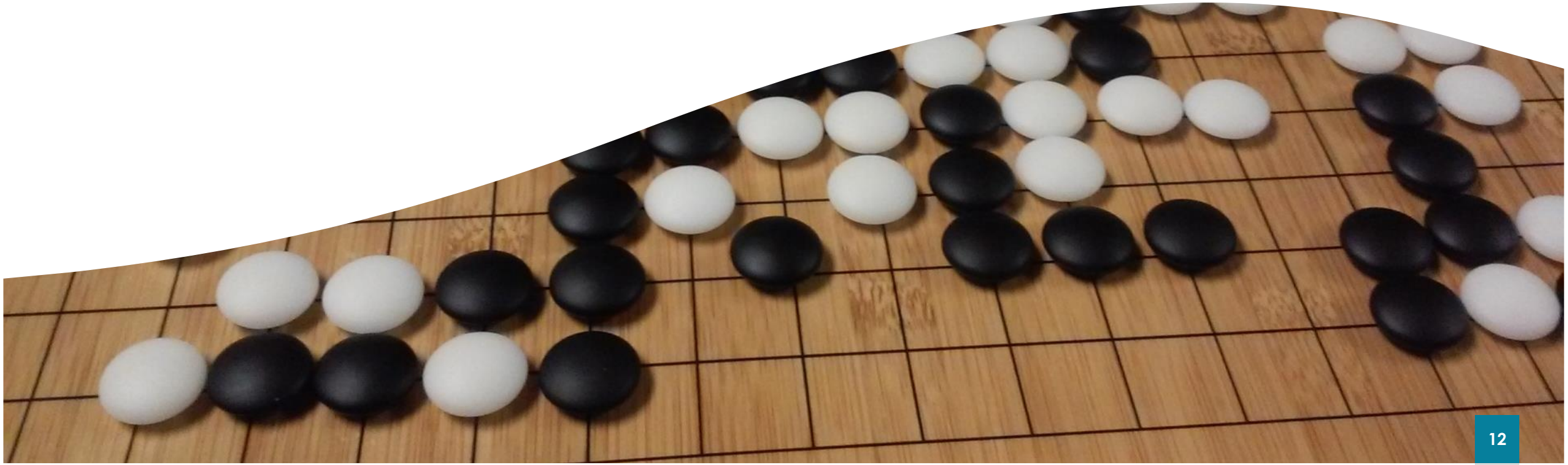
https://github.com/iproduct/java-spring-academy-2022.git

Agenda for This Session

- Basic version control with Git

Git

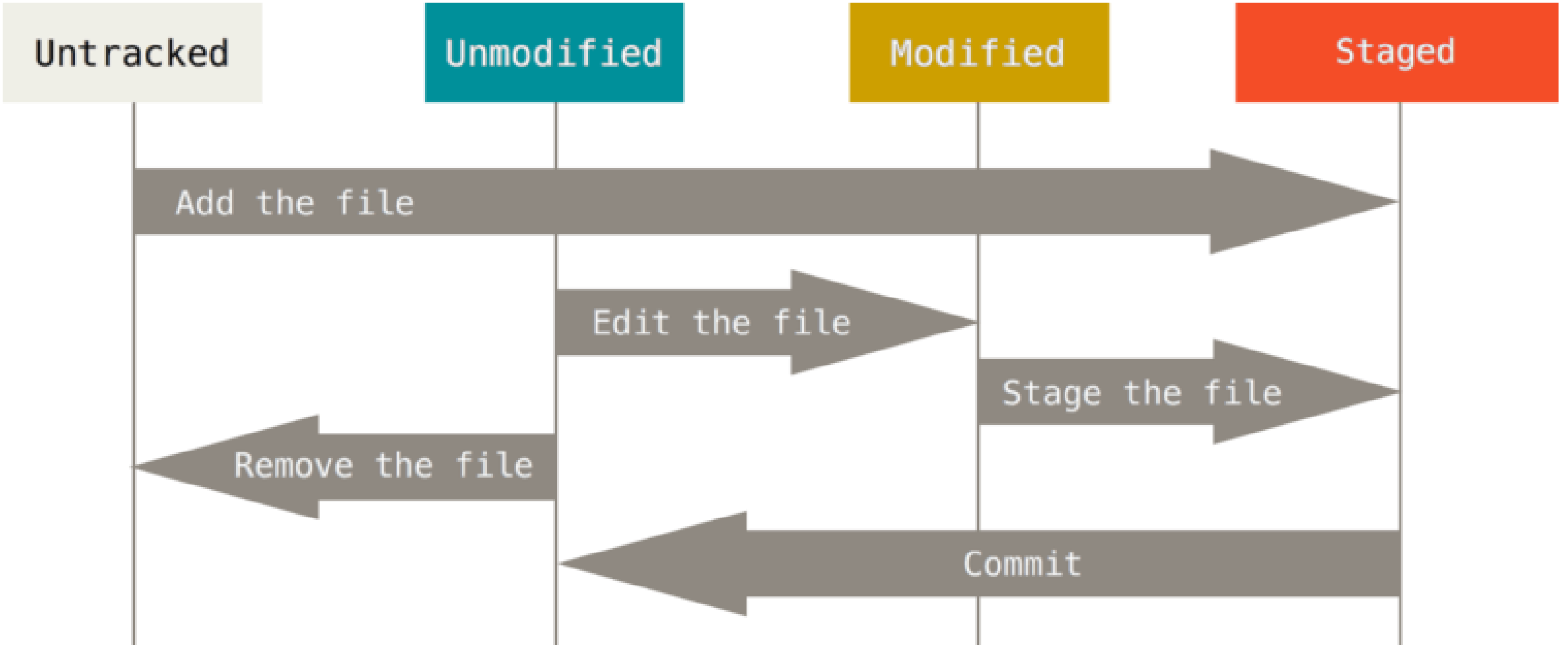
Materials from: https://git-scm.com/book/en/v2



Social Coding using Git

- Version control systems and collaborative coding: CVS, SVN, Git
- Version control system – allows saving the code changes in a structured and manageable way, with ability to recover previous code state (rollback), experiments (branches), and changes synchronization (merge)
- A distinctive feature of Git is that the changes are kept locally in a form of momentary pictures (snapshots), instead of saving the list of changes – allows fast operations.
- Three stages: **Modified** → **Staged** → **Committed**

Social Coding using Git



Main Git Commands (1)

- Configuring Git

```
$ git config --global user.name "John Smith"
$ git config --global user.email jsmith@company.com
```

- Help information for a command

```
$ git help <command_verb>
```

- Creating new repository in an existing directory

```
$ git init
```

- Local cloning of a git repository

```
$ git clone <repository_url> [<local_folder>]
```

Main Git Commands (2)

- Adding new files – Staging и Commit

```
$ git add *.java
$ git add README.txt
$ git commit -m ”initial commit of MyProject”
```

- Information about the status of the files in the project

```
$ git status
```

- Showing changes in the files

```
$ git diff
```

- Ignoring files – file **.gitignore**

```
$ cat .gitignore
```

Main Git Commands (3)

- Removing files

$ git rm README.txt

$ git commit -m ”removing README file from project”

- Renaming files

$ git mv README.txt README

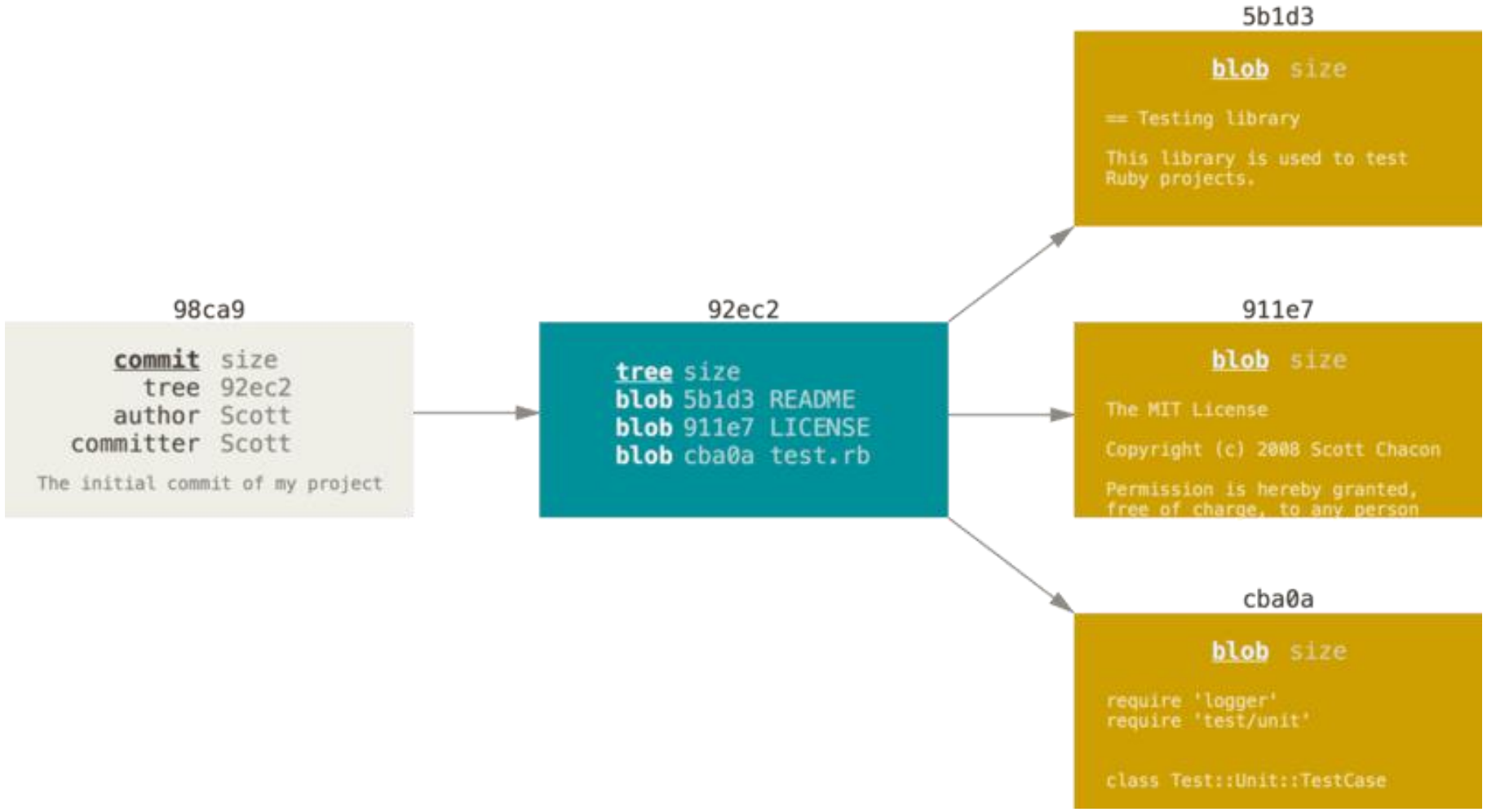
- For more information:

http://git-scm.com/book/en/Git-Basics-Recording-Changes-to-the-Repository

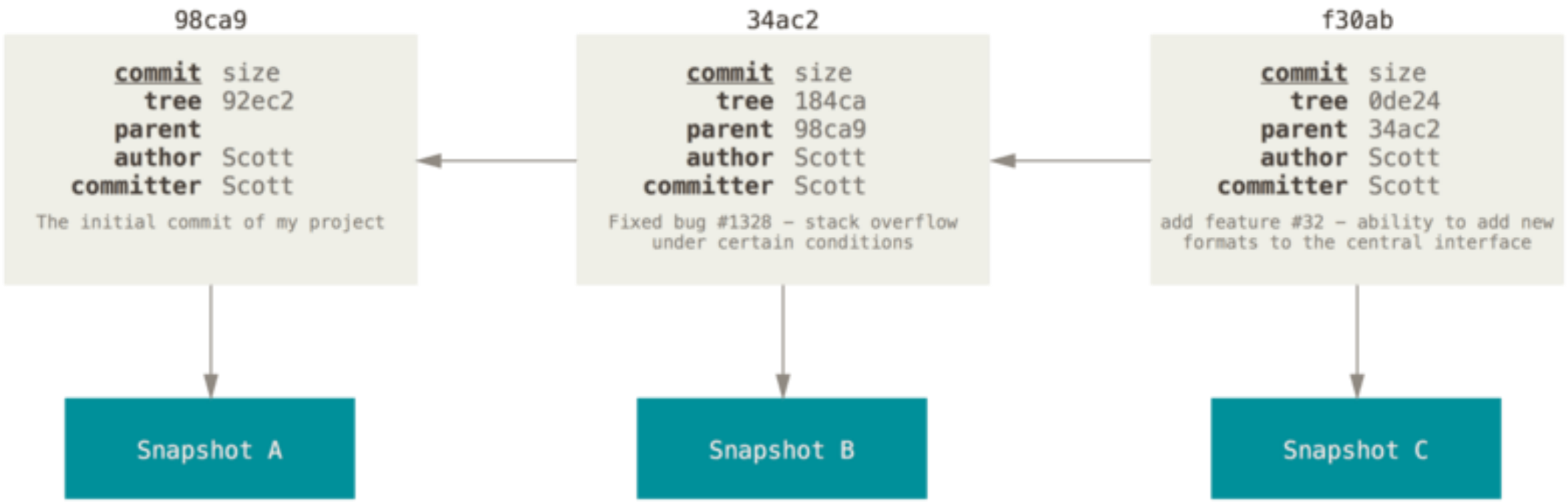
- Example Git project:

https://github.com/iproduct/java-fundamentals-2022.git

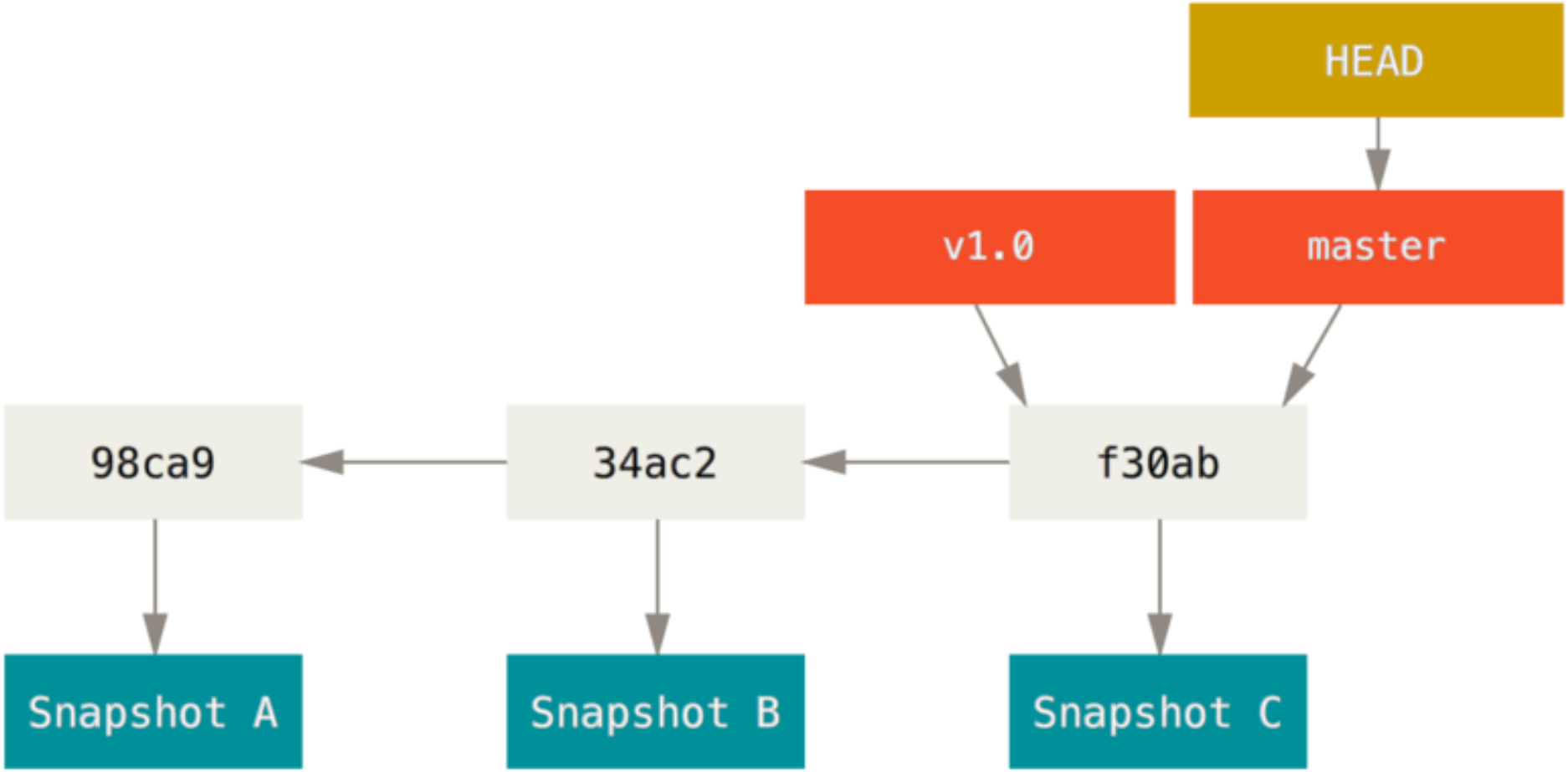
Git Blobs


98ca9
commit size
tree 92ec2
author Scott
committer Scott
The initial commit of my project
92ec2
tree size
blob 5b1d3 README
blob 911e7 LICENSE
blob cba0a test.rb
5b1d3
blob size
== Testing library
This library is used to test Ruby projects.
911e7
blob size
The MIT License
Copyright (c) 2008 Scott Chacon
Permission is hereby granted, free of charge, to any person
cba0a
blob size
require 'logger'
require 'test/unit'
class Test::Unit::TestCase

Git Commits

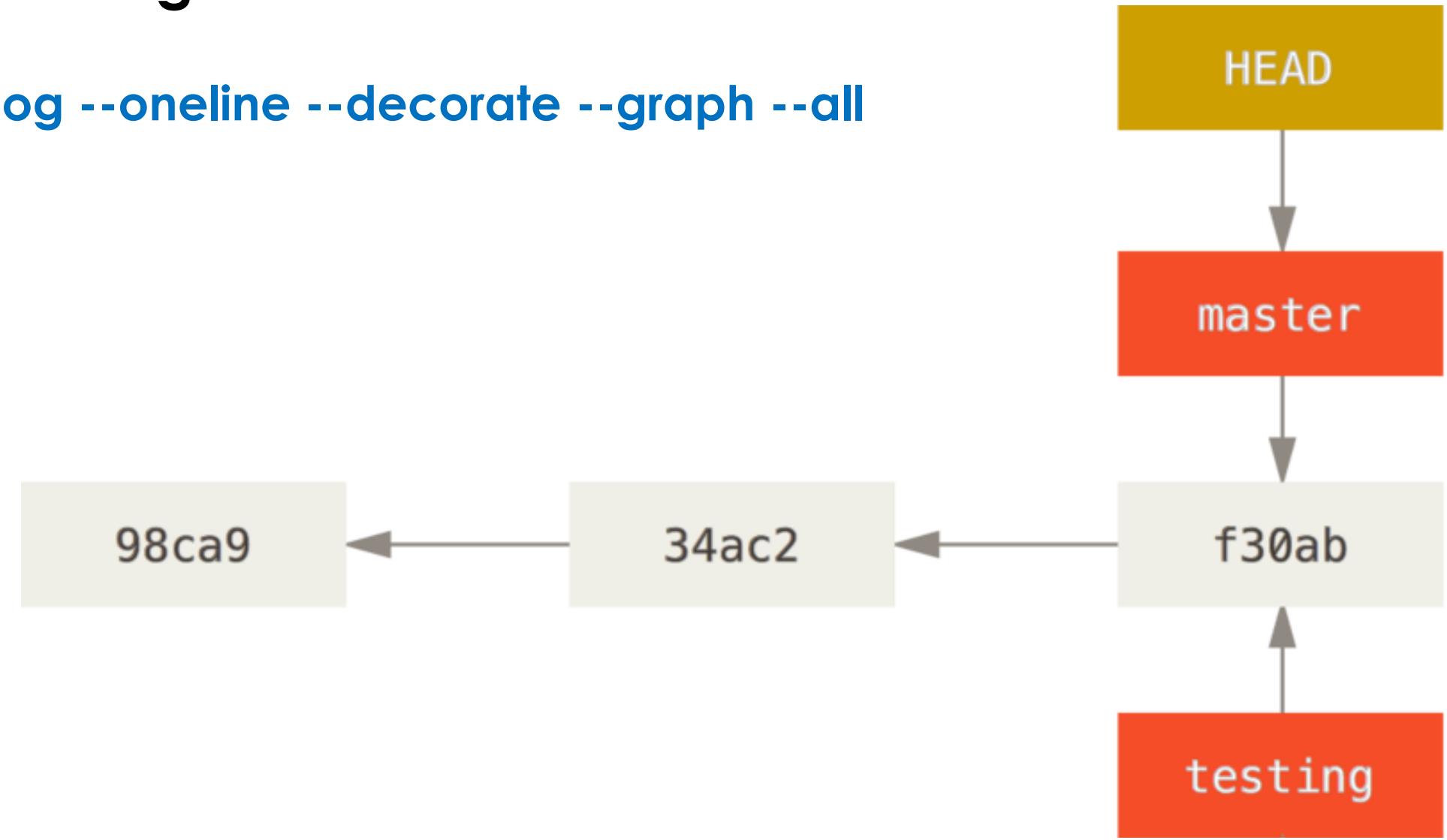

98ca9
commit size
tree 92ec2
parent
author Scott
committer Scott
The initial commit of my project
34ac2
commit size
tree 184ca
parent 98ca9
author Scott
committer Scott
Fixed bug #1328 - stack overflow under certain conditions
f30ab
commit size
tree 0de24
parent 34ac2
author Scott
committer Scott
add feature #32 - ability to add new formats to the central interface
Snapshot A
Snapshot B
Snapshot C

Head and Branches



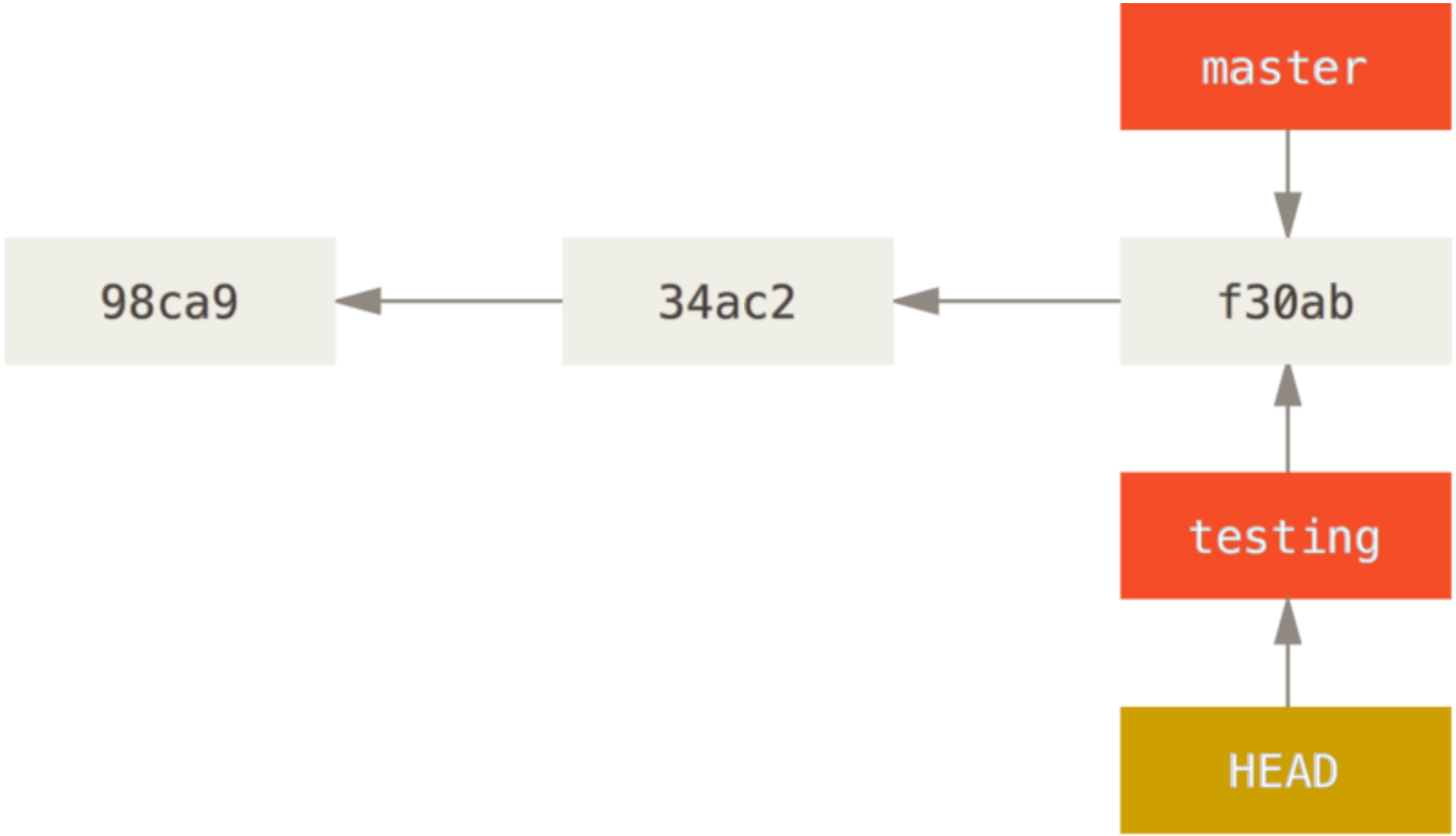
Branching

git log --oneline --decorate --graph --all



Switching Branches -

https://git-scm.com/book/en/v2/Git-Branching-Branches-in-a-Nutshell



C:\Windows\System32\cmd.exe

```
D:\Course_Java_Web_Development\git\course-git-lab>git reset --hard  e0ea918
HEAD is now at e0ea918 Merge branch 'test' into main

D:\Course_Java_Web_Development\git\course-git-lab>git log --oneline --decorate --graph --all
*   e0ea918 (HEAD, origin/main, main) Merge branch 'test' into main
|\
| * 74083d8 (origin/test, test) exit command added
* | 32f1102 PrintAllProductsCommand added
|/
*   0dca372 (tag: v1.4) conflict resolved - both products added
|\
| * b4692b6 (tag: v1.1) Update Main.java
* | aecdc9f product 1 changed
|/
*   a2295b4 Merge remote-tracking branch 'refs/remotes/origin/main' into main
|\
| * a0b619b Update README.md
* | 3f2f9ad book description changed, .idea forder ignored
|/
* 1cccd12 .gitignore ignores java unit tests
* e147ef0 .gitignore ignores java unit tests
* b116047 .gitignore ignores java unit tests
* d011b18 .gitignore ignores java unit tests
* 74607c8 .gitignore ignores java unit tests
* 7b3729c initial project commit

D:\Course_Java_Web_Development\git\course-git-lab>git checkout  0dca372 .

D:\Course_Java_Web_Development\git\course-git-lab>git checkout e0ea918 .

D:\Course_Java_Web_Development\git\course-git-lab>
```

Resources

- Pro Git book – https://git-scm.com/book/en/v2

Thank's for Your Attention!

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